

Amendments to Claims

This listing of claims will replace all prior version, and listings, of claims in the application:

1. (Amended) A mounting pin for securing a sieve element to a support frame comprising: a cylindrical body having a bore formed entirely therethrough, ~~the body having a mushroom-shaped head with a frustoconical upper surface extending from an upper edge thereof, the bore formed through the body and~~ having an outlet at a lower end thereof that is constructed and arranged such that the upper edge of a supporting rib may be accessed therethrough for the purpose of securing the mounting pin on the rib, ~~the mounting pin being secured to the upper edge of the rib by forming a weld between the lower end of the body and the supporting rib through the outlet of the bore.~~

2. (Amended) The mounting pin for securing a sieve element to a support frame of claim 1 wherein a the diameter of the body of the mounting pin body is wider than a the width of the rib on which the mounting pin is configured to be it is mounted.

3. (Amended) A sifting machine comprising:

a subframe;

a support frame that rests on, and is secured to, the subframe, the support frame comprising a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship;

~~each of the ribs being further provided with a~~ plurality of mounting pins, each mounting pin comprising a cylindrical body having a bore formed entirely therethrough, ~~the body having a mushroom-shaped head with a frustoconical upper surface extending from an upper edge thereof, the bore formed through the body and~~ having an outlet at a lower end thereof that is constructed and arranged such that the upper edge of a supporting rib may be accessed therethrough for the purpose of securing the mounting pin on one of the plurality of the rib, ~~the mounting pin being~~

~~secured to the upper edge of the rib by forming a weld between the lower end of the body and the supporting rib through the outlet of the bore; and a first and a second an array of sieve elements with edges arranged in abutting juxtaposition, the juxtaposed edges having recesses formed therein and arranged such that a~~ and secured to the support frame by the mounting pins, the head of each mounting pin engaging a pair of adjacent recesses, each recess being formed in the respective edges of abutting sieve elements and wherein the pair of adjacent recesses work together to form a receptacle complementary to the shape of a the head of a the mounting pin, the sieve elements being secured to the support frame by engaging one of the plurality of mounting pins in the receptacle.

4. (Original) A sieve element for sifting particulate materials having a plurality of lateral edges comprising a bead formed along the lateral edges of the sieve element such that when the sieve element is placed in abutting juxtaposition with one or more additional sieve elements, the beads on the abutting edges of the respective sieve elements will contact one another to form a seal therebetween to prevent the flow of particulate materials therebetween.

5. (Original) A sieve element for sifting particulate materials comprising:

a panel having a plurality of lateral edges defining a sifting surface of the panel;
a plurality of sieve openings of predetermined size formed through the sifting surface of the panel; and,

a plurality of receptacles formed in the lateral edges of the panel, the receptacles being constructed and arranged to receive therein a mechanism for securing the sieve element to a support frame of a sifting machine, the receptacles being further constructed and arranged such that an area of the sifting surface corresponding to the location of a respective receptacle has a diameter that is less than twice the diameter of the receptacle itself.

6. (New) A mounting pin for securing a sieve element to a support frame comprising:
a head having an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the under surface forming a first angle from the axis of symmetry that is greater than a second angle formed from the upper surface to the axis of symmetry;
and
a stem having a narrower cross-section than the head, the stem being adjacent to the under surface of the head and extending away from the head to a distal end, the distal end having a mounting mechanism configured to attach to the support frame.
7. (New) The mounting pin of claim 6 wherein a difference between the first angle of the under surface and the second angle of the upper surface is great enough that an insertion force needed to insert the mounting pin into a receptacle formed between sieve elements is lower than a removal force needed to remove the mounting pin from the receptacle.
8. (New) The mounting pin of claim 6 wherein the head comprises a flat top adjacent to the upper surface of the head, the top extending towards the axis of symmetry and spaced apart from the stem so that the head defines a frustoconical shape.
9. (New) The mounting pin of claim 6 wherein the head comprises a rounded top adjacent to the upper surface of the head, the top extending towards the axis of symmetry and spaced apart from the stem.
10. (New) The mounting pin of claim 6 wherein the upper surface comprises a rounded shape extending towards the axis of symmetry and spaced apart from the stem.
11. (New) The mounting pin of claim 6 wherein the upper surface of the head extends towards the axis of symmetry and spaced apart from the stem so that the head defines a conical shape.

12. (New) The mounting pin of claim 6 wherein the mounting mechanism of distal end of the stem comprises a slot sized to receive a portion of the support frame.

13. (New) The mounting pin of claim 6 wherein the mounting mechanism of distal end of the stem is configured such that the mounting pin can be bolted to a portion of the support frame.

14. (New) The mounting pin of claim 6 wherein the cross-section of the stem is wider than a width of a portion of the support frame that the mounting pin is configured to be attached.

15. (New) The mounting pin of claim 6 wherein the cross-section of the stem is narrower than a width of a portion of the support frame that the mounting pin is configured to be attached.

16. (New) The mounting pin of claim 6 wherein the head and stem are formed from a unitary structure.

17. (New) The mounting pin of claim 6 wherein the head and stem are formed from different materials.

18. (New) The mounting pin of claim 6 wherein the head comprises an abrasion resisting material.

19. (New) The mounting pin of claim 6 wherein the head comprises a composite of materials.

20. (New) The mounting pin of claim 6 wherein at least one of the head and stem comprises steel.

21. (New) The mounting pin of claim 6 wherein at least one of the head and stem comprises polyurethane.
22. (New) The mounting pin of claim 6 wherein at least one of the head and stem comprises ceramic.
23. (New) The mounting pin of claim 6 wherein at least one of the head and stem comprises plastic.
24. (New) The mounting pin of claim 6 wherein the first angle formed between the under surface and the axis of symmetry is between 85 and 95 degrees.
25. (New) The mounting pin of claim 6 wherein the under surface is substantially perpendicular to the axis of symmetry.
26. (New) The mounting pin of claim 6 wherein the second angle formed between the upper surface and the axis of symmetry is between 45 and 60 degrees.
27. (New) The mounting pin of claim 6 wherein the outer edge formed by the intersection of the upper surface and the under surface is relatively sharp.
28. (New) The mounting pin of claim 6 wherein the outer edge formed by the intersection of the upper surface and the under surface includes a cylindrical section interposed between the surfaces.
29. (New) The mounting pin of claim 6 wherein the outer edge formed by the intersection of the upper surface and the under surface includes a radius section forming a gentle transition between the surfaces.

30. (New) A support frame having a plurality of the mounting pins of claim 6 mounted thereto, the support frame comprising a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship, the plurality of mounting pins being secured to the upper edge of the ribs.

31. (New) A sieve bed comprising a first and a second sieve element with edges arranged in abutting juxtaposition and having a plurality of the mounting pins of claim 6 attached thereto, the juxtaposed edges of the sieve elements having recesses formed therein and arranged such that a pair of adjacent recesses work together to form a receptacle complementary to the shape of the mounting pin head, the sieve elements being configured to be secured to the support frame by engaging one of the plurality of mounting pins in the receptacle.

32. (New) A mounting pin for securing a sieve element to a support frame comprising:
a head having an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the upper surface of the mounting pin being operatively configured to engage a receptacle formed between sieve elements with an insertion force that is lower than a removal force needed to disengage the under surface of the mounting pin from the receptacle; and
a stem having a narrower cross-section than the head, the stem being adjacent to the under surface of the head and extending away from the head to a distal end, the distal end having a mounting mechanism configured to attach to the support frame.

33. (New) The mounting pin of claim 32 wherein the head comprises a flat top adjacent to the upper surface of the head, the top extending towards the axis of symmetry and spaced apart from the stem so that the head defines a frustoconical shape.

34. (New) The mounting pin of claim 32 wherein the head comprises a rounded top adjacent to the upper surface of the head, the top extending towards the axis of symmetry and spaced apart from the stem.

35. (New) The mounting pin of claim 32 wherein the upper surface comprises a rounded shape extending towards the axis of symmetry and spaced apart from the stem.

36. (New) The mounting pin of claim 32 wherein the upper surface of the head extends towards the axis of symmetry and spaced apart from the stem so that the head defines a conical shape.

37. (New) The mounting pin of claim 32 wherein the cross-section of the stem is wider than a width of a portion of the support frame that the mounting pin is configured to be attached.

38. (New) The mounting pin of claim 32 wherein the cross-section of the stem is narrower than a width of a portion of the support frame that the mounting pin is configured to be attached.

39. (New) The mounting pin of claim 32 wherein the head and stem are formed from a unitary structure.

40. (New) The mounting pin of claim 32 wherein the head and stem are formed from different materials.

41. (New) The mounting pin of claim 32 wherein the head comprises an abrasion resisting material.

42. (New) The mounting pin of claim 32 wherein the head comprises a composite of materials.

43. (New) The mounting pin of claim 32 wherein the under surface forms a first angle from the axis of symmetry that is greater than a second angle formed from the upper surface to the axis of symmetry.
44. (New) The mounting pin of claim 43 wherein the first angle formed between the under surface and the axis of symmetry is between 85 and 95 degrees.
45. (New) The mounting pin of claim 43 wherein the under surface is substantially perpendicular to the axis of symmetry.
46. (New) The mounting pin of claim 43 wherein the second angle formed between the upper surface and the axis of symmetry is between 45 and 60 degrees.
47. (New) The mounting pin of claim 32 wherein the outer edge formed by the intersection of the upper surface and the under surface is relatively sharp.
48. (New) The mounting pin of claim 32 wherein the outer edge formed by the intersection of the upper surface and the under surface includes a cylindrical section interposed between the surfaces.
49. (New) The mounting pin of claim 32 wherein the outer edge formed by the intersection of the upper surface and the under surface includes a radius section forming a gentle transition between the surfaces.
50. (New) A support frame having a plurality of the mounting pins of claim 32 mounted thereto, the support frame comprising a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship, the plurality of mounting pins being secured to the upper edge of the ribs.

51. (New) A sieve bed comprising a first and a second sieve element with edges arranged in abutting juxtaposition and having a plurality of the mounting pins of claim 32 attached thereto, the juxtaposed edges of the sieve elements having recesses formed therein and arranged such that a pair of adjacent recesses work together to form a receptacle complementary to the shape of the mounting pin head, the sieve elements being configured to be secured to the support frame by engaging one of the plurality of mounting pins in the receptacle.

52. (New) A sieve element for sifting particulate materials comprising:

a panel having a plurality of lateral edges defining a sifting surface of the panel;
a plurality of sieve openings of predetermined size formed through the sifting surface of the panel; and

a recess formed in one of the lateral edges of the panel and having an entrance opening proximate a bottom surface of the panel, a bead section being formed proximate to the entrance opening and extending inward from a wall of the recess, the recess and entrance opening being constructed and arranged to receive therein a head of a mounting pin for securing the sieve element to a support frame of a sifting machine, a diameter of the entrance opening being smaller than a diameter of an outer edge of the mounting pin head, the recess and entrance opening being formed in a shape complementary to the shape of the mounting pin head where the mounting pin head has an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the mounting pin head under surface forming a first angle from the axis of symmetry that is greater than a second angle formed from the mounting pin head upper surface to the axis of symmetry.

53. (New) A sieve bed comprising a first and a second sieve element of claim 52 with edges arranged in abutting juxtaposition, the juxtaposed edges of the sieve elements having arranged such that a pair of adjacent recesses work together to form a receptacle complementary to the shape of the mounting pin head, the sieve elements being configured to be secured to the support frame by engaging a mounting pin in the receptacle.

54. (New) A sieve element of claim 52 wherein the lateral edges comprise a plurality of recesses spaced apart from one another.

55. (New) A support frame for a sieve bed comprising:

- a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship; and

- a plurality of mounting pins, each mounting pin comprising a head having an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the under surface forming a first angle from the axis of symmetry that is greater than a second angle formed from the upper surface to the axis of symmetry, each mounting pin further comprising a stem having a narrower cross-section than the head, the stem being adjacent to the under surface of the head and extending away from the head to a distal end, the distal end having a mounting mechanism configured to attach to one of the plurality of elongate thin ribs.

56. (New) A shifting machine comprising:

a subframe;

a support frame that rests on and is secured to the subframe, the support frame comprising a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship; and

a plurality of mounting pins, each mounting pin comprising a head having an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the under surface forming a first angle from the axis of symmetry that is greater than a second angle formed from the upper surface to the axis of symmetry, each mounting pin further comprising a stem having a narrower cross-section than the head, the stem being adjacent to the under surface of the head and extending away from the head to a distal end, the distal end having a mounting mechanism configured to attach to one of the plurality of elongate thin ribs; and

a first and a second sieve elements with edges arranged in abutting juxtaposition, the juxtaposed edges having recesses formed therein and arranged such that a pair of adjacent recesses work together to form a receptacle complementary to the shape of one of the plurality of mounting pin heads, the sieve elements being secured to the support frame by engaging one of the plurality of mounting pins in the receptacle.

57. (New) A sieve element for sifting particulate materials comprising:
a panel having a plurality of lateral edges defining a sifting surface of the panel;
a plurality of sieve openings of predetermined size formed through the sifting surface of the panel; and
a recess formed in one of the lateral edges of the panel and having an entrance opening proximate a bottom surface of the panel, a bead section being formed proximate to the entrance opening and extending inward from a wall of the recess, the recess and entrance opening being constructed and arranged to receive therein a head of a mounting pin for securing the sieve element to a support frame of a sifting machine, a diameter of the entrance opening being smaller than a diameter of an outer edge of the mounting pin head, the recess and entrance opening being formed in a shape complementary to the shape of the mounting pin head where the mounting pin head has an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the mounting pin head upper surface being operatively configured to engage the recess with an insertion force that is lower than a removal force needed to disengage the mounting pin under surface from the recess.
58. (New) A sieve bed comprising a first and a second sieve element of claim 57 with edges arranged in abutting juxtaposition, the juxtaposed edges of the sieve elements having arranged such that a pair of adjacent recesses work together to form a receptacle complementary to the shape of the mounting pin head, the sieve elements being configured to be secured to the support frame by engaging a mounting pin in the receptacle.
59. (New) A sieve element of claim 57 wherein the lateral edges comprise a plurality of recesses spaced apart from one another.

60. (New) A support frame for a sieve bed comprising:

a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship; and

a plurality of mounting pins, each mounting pin comprising a head having an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the mounting pin head upper surface being operatively configured to engage a receptacle formed between sieve elements with an insertion force that is lower than a removal force needed to disengage the mounting pin under surface from the receptacle, each mounting pin further comprising a stem having a narrower cross-section than the head, the stem being adjacent to the under surface of the head and extending away from the head to a distal end, the distal end having a mounting mechanism configured to attach to one of the plurality of elongate thin ribs.

61. (New) A shifting machine comprising:

a subframe;

a support frame that rests on and is secured to the subframe, the support from comprising a plurality of elongate thin ribs having upper edges arranged in a substantially coplanar relationship; and

a plurality of mounting pins, each mounting pin comprising a head having an upper surface intersecting with an under surface at an outer edge spaced away from an axis of symmetry of the head, the mounting pin head upper surface being operatively configured to engage a receptacle formed between sieve elements with an insertion force that is lower than a removal force needed to disengage the mounting pin under surface from the receptacle, each mounting pin further comprising a stem having a narrower cross-section than the head, the stem being adjacent to the under surface of the head and extending away from the head to a distal end, the distal end having a mounting mechanism configured to attach to one of the plurality of elongate thin ribs; and

a first and a second sieve elements with edges arranged in abutting juxtaposition, the juxtaposed edges having recesses formed therein and arranged such that a pair of adjacent recesses work together to form the receptacle complementary to the shape of one of the plurality of mounting pin heads, the sieve elements being secured to the support frame by engaging one of the plurality of mounting pins in the receptacle.